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# The African members of the trap-door spider family Migidae (Araneae: Mygalomorphae) 2: the genus *Poecilomigas* Simon, 1903

by

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## ABSTRACT

The genus *Poecilomigas* Simon (Araneae: Migidae) is revised. Three valid species, all from Africa, are recognised. One new species, *elegans*, is described. *Poecilomigas* is tentatively suggested to be monophyletic, and its sister-group lies somewhere in the genus *Migas* L. Koch. The hypothesis of monophyly of the Miginae advanced by Raven (1985) is corroborated. *Poecilomigas* are true 'tree trap-door' spiders, building arboreal nests in forest and woodland. A key for *Poecilomigas* species is provided.

## INTRODUCTION

While it has long been established that the African fauna of mygalomorph spiders is both rich and diverse, understanding of the evolution in time and space of this fauna has been hampered by a profound lack of testable hypotheses concerning the relationships of the component taxa. Fortunate, then, is the growing trend in Arachnid taxonomy towards cladistic methodology leading to rigorous hypotheses of monophyly and sister-group relationship. In this, the fourth of a series of papers devoted to African Mygalomorphae and the second to deal with the trap-door spider family Migidae, the monophyly and relationships of the genus *Poecilomigas* Simon are addressed.

Revisionary studies of mygalomorph taxa in all parts of the world have been greatly expedited by the recent, comprehensive study of the mygalomorph genera by Raven (1985). Of relevance to studies of the African Migidae were the transfer of the genus *Moggridgea* O. P. Cambridge to the Paramiginae (a conclusion corroborated by Griswold 1987) and the relimitation of the subfamily Miginae to include *Poecilomigas* Simon and *Migas* L. Koch. Revision of *Poecilomigas* has revealed that character states implicitly predicted by Raven's hypothesis are true for all included species.

*Poecilomigas* was proposed by Simon in 1903 for a new species of banded-legged trap-door spider from Natal, South Africa: *P. pulchripes*. At almost the same time, O. P. Cambridge (1903) created the genus *Caedmon* for an Eastern Cape species previously described by him: *Moggridgea abrahami* O. P. Cambridge, 1889. The generic affinity of *abrahami* with *Poecilomigas* was recognised by Purcell (1903), and the synonymy of *Caedmon* with *Poecilomigas* was proposed by Hewitt (1915*b*).

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*Poecilomigas basilleupi* was proposed by Benoit (1962) for a species from Mt. Kilimanjaro.

## MATERIALS AND METHODS

Descriptions are of a single specimen, noted at the head of the description, with the more important aspects of variation detailed subsequently. Conventions for measurement and depiction of the eyes, cheliceral teeth, sternal sigilla, legs, spines, tarsal claws and spermathacae are as in Griswold (1987). All measurements are in millimetres. Abbreviations referring to the ocular area, spinnerets and tarsal claws are standard for the Araneae. Spermathecae were excised with fine needles and cleared for 12–16 hours in warm lactic acid for examination with a Zeiss compound microscope. Scanning electron micrographs were made on a JEOL T-200 SEM. Spinnerets were critical-point-dried prior to examination. Illustrations were made with the aid of a drawing tube (camera lucida) on a Wild stereomicroscope and Zeiss compound and stereomicroscopes.

Figs 1–2. *Poecilomigas abrahami* (O. P. Cambridge). 1. ♂, Town Bush, Natal. 2. ♀, Dlinza Forest, Zululand.

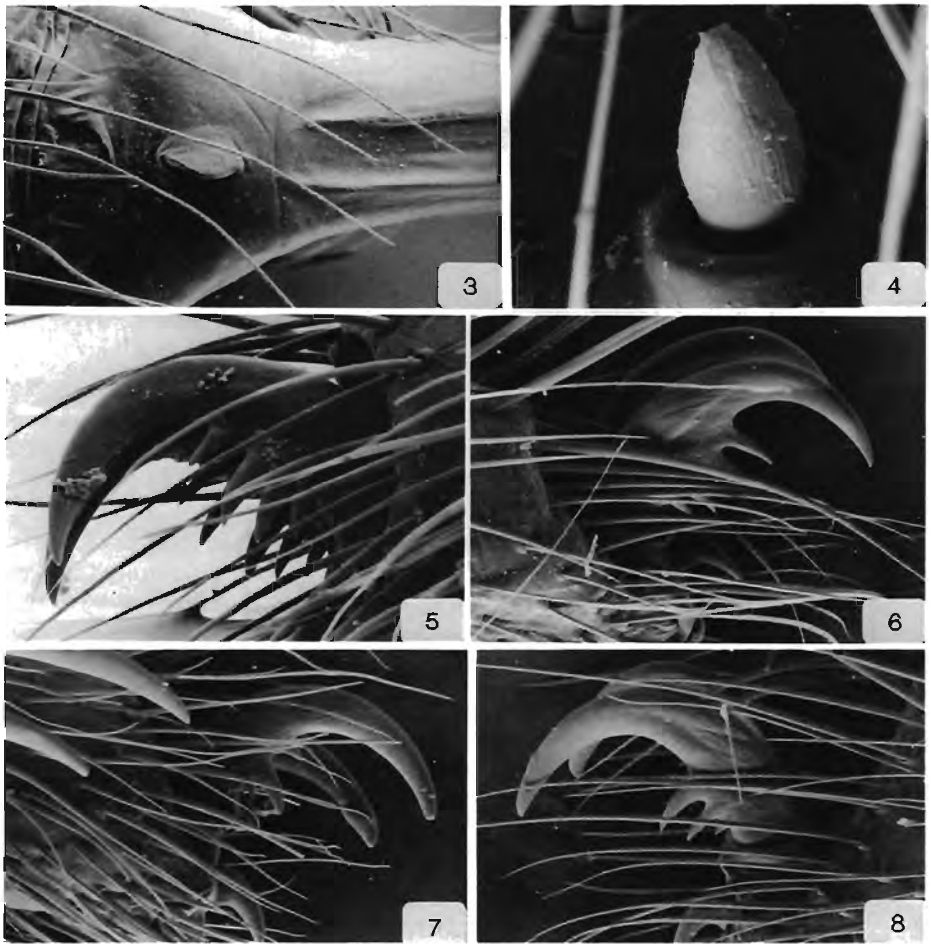
## RELATIONSHIPS

From the time of its description in 1903, *Poecilomigas* has been associated with the Australasian genus *Migas* L. Koch, and usually with the African genus *Moggridgea* O. P. Cambridge as well (Simon 1903*b*). Recently, in a comprehensive revision of all the mygalomorph genera (Raven 1985), the placement of the migid genera was re-examined. *Poecilomigas* and *Migas* were united in the Miginae, and *Moggridgea* was transferred to the Paramiginae. The correctness of

Raven's decision with regards to *Moggridgea* has been confirmed (Griswold 1987).

Raven united *Poecilomigas* and *Migas* within the Miginae on the basis of two proposed synapomorphies: the thorax raised as high as the caput (Fig. 28), and a small, basal tooth between the keels on the outer surface of the fang (Fig. 3). The presence of the basal tooth on the fang of all three species of *Poecilomigas* confirms the diagnostic value of this character and corroborates Raven's (1985) hypothesis of monophyly for the Miginae.

Within the Miginae it remains to establish the monophyly of *Poecilomigas* and diagnose this genus from its presumed sister-group, the Australasian *Migas*. Through the courtesy of Mr P. Hillyard (British Museum, Natural History) and Drs R. Forster (Otago Museum, Dunedin, New Zealand) and N. Platnick

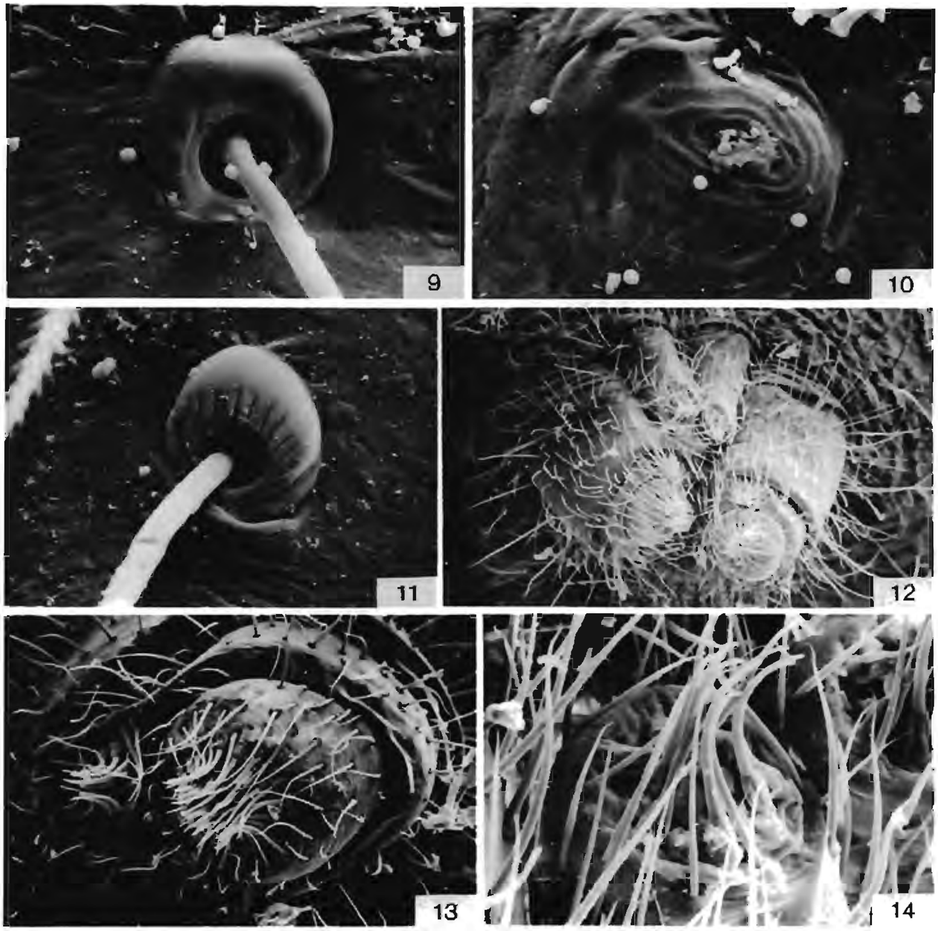


Figs 3–8. *Poecilomigas abrahami* (O. P. Cambridge). 3–4, 7–8, ♀, Grahamstown. 5–6. ♂, Town Bush. 3. Dorsum of fang with basal tooth, 78 ×. 4. Cuspule on pedipalpal coxa, 530 ×. 5. Tarsus I, claws, 177 ×. 6. Tarsus IV, claws, 100 ×. 7. Tarsus I, claws, 143 ×. 8. Tarsus IV, claws, 145 ×.

(American Museum of Natural History, New York) I have had the opportunity to examine nine species of *Migas* from Australia and New Zealand, significantly supplementing the data available in published descriptions.

Throughout the history of the association of *Poecilomigas* and *Migas*, diagnosis of these taxa has not been satisfactory. In a key, Simon (1903*b*:880–881) utilised four characters to distinguish *Poecilomigas (Migas)*: (1) caput not discrete (discrete), (2) thoracic fovea angulate (evenly recurved), (3) AME closer together than to ALE (anterior eyes equidistant), and (4) AER slightly recurved (nearly straight). Examination of large series of specimens from Africa and New Zealand and the data published by Wilton (1968) and Raven (1984) reveals that there are no significant differences in the first character, and that the degree of intraspecific variation in the other characters renders them diagnostically useless. O. P. Cambridge (1903:144), discussing the differences between *Caedmon* ( = *Poecilomigas*) and *Migas*, stated that in the former the cephalothorax is nearly as broad as long and rounded at the sides, whereas in *Migas* the carapace is much longer than broad, with the sides nearly straight. In fact, cephalothorax length/width differs little between *Poecilomigas* (1,05–1,28) and *Migas* (1,11–1,37), and in the latter genus the sides may also be rounded. Raven (1985:144) distinguished *Poecilomigas* from *Migas* in that the former has the caput indistinctly demarcated and a thick covering of long, thin hairs between the spines beneath tibiae-metatarsi I and II. The invalidity of the first character has been discussed above. The second character is variable in *Poecilomigas*, with the vestiture of long, slender hairs weak in *basilleupi* (Fig. 54), and weak to dense (Fig. 29) in *abrahami*. Density seems directly proportional to the size of the individual. Such hairs are not present in males. These hairs are not mentioned for any *Migas* species discussed by Wilton (1968) or Raven (1984), but a female specimen (*Migas* sp. nr *hesperus*) from New Zealand (AMNH) has a vestiture of ventral hairs on tibiae-metatarsi I and II equal to that in the largest *Poecilomigas*, and a weak vestiture may be present in other species. Thus it appears that none of the characters previously cited are adequate to diagnose *Poecilomigas* from *Migas*.

There are two characters found in males which appear to distinguish *Poecilomigas* from at least the New Zealand species of *Migas*. In *Poecilomigas* a dense scopula occurs beneath metatarsi-tarsi III and IV (Figs 21, 36) and dorsal spines on the femora are short and stout (Fig. 35) to absent (Fig. 70). In *Migas* legs III and IV lack scopulae (Fig. 20) and dorsal spines on the femora are very long and slender (Fig. 69). This diagnosis is complicated by *Migas variapalpus* Raven from Australia in which males lack femoral spines and have scopulae on tarsi III and IV. This species is the most peculiar in the Miginae, and is unique in having the male palpus with a reflexed embolus and/or a conical embolus with spiral ridge (the holotype is dimorphic in this respect; a specimen in the AMNH from Macksville, NSW has both palpi with reflexed emboli) and coiled spermathecae. The relationships of this species to the other *Migas* are obscure. Such a mosaic of character states leads to one conclusion—*Migas*, as currently limited, is not monophyletic, and among the included species may be the sister-group of *Poecilomigas*. Resolution of this problem will require revision of all species included in the Miginae, and would benefit from knowledge of the males for a greater proportion of species than is currently the case (10 out of 36).



**Figs 9–14.** *Poecilomigas abrahami* (O. P. Cambridge). 9–10. ♂, Town Bush. 11–14. ♀, Grahamstown. 9. Trichobothrial base, tarsus I, 1023 ×. 10. Tarsal organ I, 1023 ×. 11. Trichobothrial base, tarsus I, 741 ×. 12. Spinnerets, ventral, 29 ×. 13. PLS, apex, 79 ×. 14. PMS, apex, 175 ×.

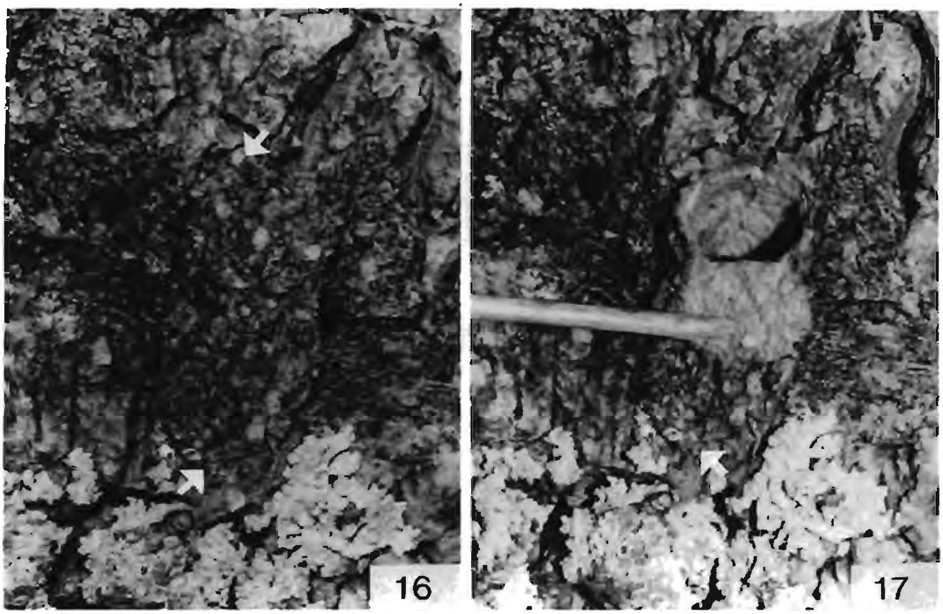
Recognising the difficulties in establishing and diagnosing the sister-group, we may ask if *Poecilomigas* is monophyletic? Such an assertion requires demonstration of at least one unique, derived character (autapomorphy). The phylogenetic significance (primitive or derived) of the male characters discussed above is unclear. But there is one character found at least in females and juveniles of all *Poecilomigas* species, which is rare in the Miginae and may be derived. The legs are pale, with dark dorsal triangles and lateral maculations on the tibiae and broad, median annuli on the metatarsi (Figs 1–2, 27, 36, 53). Presumably it was the bold markings of the legs which inspired Simon (1903*a*) to name the genus *Poecilomigas* (G. *poecilos*: variegated). Elsewhere in the family leg banding is recorded only in 1 species in the Paramiginae, *Moggridgea occidua* Simon (Griswold, 1987:54), and this occurrence is most parsimoniously considered a parallelism. Such markings are not recorded from any of the described species of *Migas*. Similar leg markings have been observed in an undescribed species of *Migas* from Bay of Plenty, New Zealand, but as the spermathecae of this species are strongly capitate, it is certainly related to those other New Zealand *Migas* with capitate spermathecae (Wilton 1968: Figs 361, 404) and uniformly dark legs. Accordingly, leg banding is hypothesised to have arisen as parallelisms within the Miginae in this species and in *Poecilomigas*.

*Poecilomigas* may then be tentatively considered monophyletic, and be distinguished from other Miginae by the character combination of legs annulate, males with legs III and IV scopulate, femoral spines stout to absent, palpal bulb pyriform, and females with spermathecae simple.

Fig. 15. Typical habitat for *Poecilomigas abrahami* (O. P. Cambridge) at Town Bush Forest, Pietermaritzburg, South Africa.

## NATURAL HISTORY

Only the habits of *Poecilomigas abrahami* are known, but it is likely that those of *elegans* and *basilleupi* are similar. *Poecilomigas* appear to be exclusively arboreal. Nests are built on the trunks of a great variety of indigenous trees, including *Rauvolfia caffra, Xymalos monospora, Rhus chirindensis, Ficus* spp., *Erythrina* spp., *Cussonia* spp., and introduced trees such as *Quercus*. It appears that almost any tree is suitable as long as the bark is somewhat irregular and soft enough to allow pieces to be picked off for camouflage. Trees with very smooth trunks or peeling bark, such as *Eucalyptus*, were never found to harbour *Poecilomigas*. More than 40 nests (Fig. 17) were observed in Natal and Zululand, South Africa. All were situated in depressions or crevices on tree bark, oval, 2,20 to 2,50 times wider than long, slightly more than twice the length of the occupant, usually vertically oriented but rarely horizontal. All nests were furnished with a wafer-type door at each end. The doors were oval, 1,10 to 1,45 times wider than long, and the upper door, to which the cephalothorax of the spider was typically oriented within the nest, was slightly larger than the lower, averaging about one third the length of the nest. When molested, spiders would drop through the lower door to escape. O. P. Cambridge (1889:42) and Pocock (1895:187) and Hewitt (1915*a*:125) report receiving nests attributed to this species with one or two doors. Nest building was twice observed in captivity. The central, tubular portion of the nest was constructed first and camouflaged by adding bits of the surrounding substrate to the silken weave. The initial construction required several hours. Doors were added and camouflaged subsequently. Captive spiders proved quite mobile, and large individuals were observed to evict and occupy the nests of smaller individuals. This mobility may be responsible for the large number of intact, but empty, nests found in nature. The camouflage of the occupied nest is superb (Fig. 16), and it is very difficult to locate such nests by sight. A more fruitful means of searching involves identification of a suitable tree by the presence of the open doors of abandoned nests, and then feeling slowly along the bark until a soft spot representing an occupied nest is encountered.



Figs 16–17. Nest of *Poecilomigas abrahami* (O. P. Cambridge) on bark of Quinine Tree (*Rauvolfia caffra* Sonder), Pietermaritzburg, South Africa. 16. Doors closed, indicated by arrows. 17. Upper door opened, lower indicated by arrow.

*Poecilomigas* occur in a variety of habitats, including lowland, montane, and riparian forests, moist, open woodlands, and even in city parks, botanical gardens, and on shade trees lining streets. Principle requisites appear to be large, shady trees (Fig. 15).

It is likely that the life cycle is similar to that described for *Moggridgea* (Griswold

1987). Adult females of *abrahami* have been collected throughout the year. Penultimate males collected in mid-wet season (January) and late dry season (September) subsequently moulted to maturity. Two females with young were collected in early dry season (June) at Dlinza Forest, Zululand.

## GEOGRAPHY

The genus *Poecilomigas* is distributed through the moister regions of eastern Africa (Fig. 18) from the region east of Algoa Bay and the Uitenhage Basin in South Africa to Tanzania in East Africa. A very large apparent distributional gap occurs between the northernmost records of *abrahami* in Zululand, South Africa and the type locality of *basilleupi* at Mt. Kilimanjaro in northern Tanzania. This gap is probably an artefact of incomplete collecting, and it is likely that *Poecilomigas* is generally distributed in forest and woodland in the intervening region. An unidentified species of *Poecilomigas*, represented by juveniles and a deformed male (NM), has been examined from the Soutpansberg mountains in

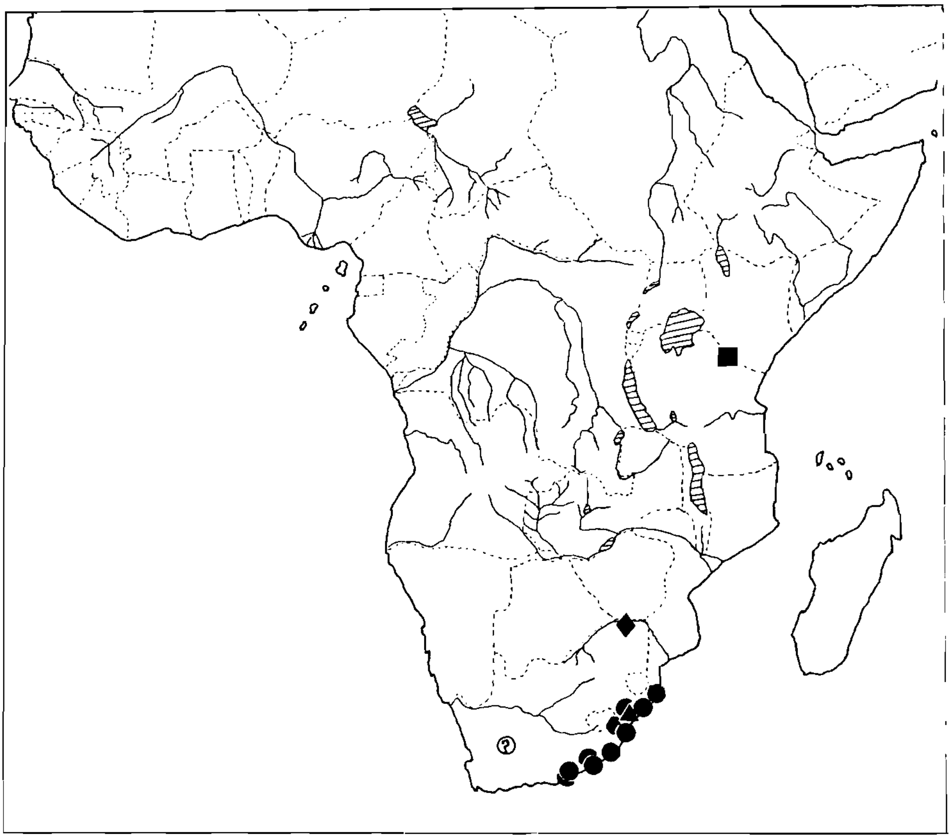


Fig. 18. Map of sub-saharan Africa showing distribution of *Poecilomigas* species: ● *P. abrahami* (O. P. Cambridge); ⓘdoubtful record of *P. abrahami* from Fraserberg, Cape Province; ◆ undetermined species known only from juveniles and incomplete ♂; ▲ *P. elegans* sp. n.; ■ *P. basilleupi* Benoit.

northern South Africa, lending support to this hypothesis. A single specimen of *P. abrahami* labelled as coming from Fraserberg in the central Cape Province, South Africa (MRAC), deserves further scrutiny. The locality falls in a region classified as 'arid karoo' by Acocks (1975), including some of the driest parts of South Africa. The vegetation is desert bush and grassland, with trees largely absent except along major watercourses. Considering the predilection for woodland shown by *abrahami*, its occurrence in such dry vegetation is unlikely. While the occurrence in riparian woodland cannot be ruled out, it is more likely that the locality record results from a labelling error, and the range of *abrahami* into central Cape Province must be considered dubious.

It is noteworthy that the range of *Poecilomigas* is bounded on the west by the region of the Uitenhage Basin and Algoa Bay, despite the occurrence of apparently suitable forest and woodland habitat in the southwestern parts of Cape Province. In this way the distribution mirrors that of *Microstigmata* (Araneae: Microstigmatidae) (Griswold 1985). The importance of the Algoa Bay/Uitenhage Basin interval in the distribution of forest dwelling arthropods has been discussed previously (Stuckenberg 1962, Griswold 1985). Also worthy of note is the distribution of the sister-groups of the two migid genera occurring in Africa. *Moggridgea*, in the Paramiginae, is related to *Micromesomma* from Madagascar (Griswold 1987). *Poecilomigas*, on the other hand, is related to *Migas* which occurs in Australia, New Zealand, New Caledonia and possibly Chile. Such a diverse geography of sister-group relationships for the African Migidae serves to emphasise the complex biogeographic history of the continent.

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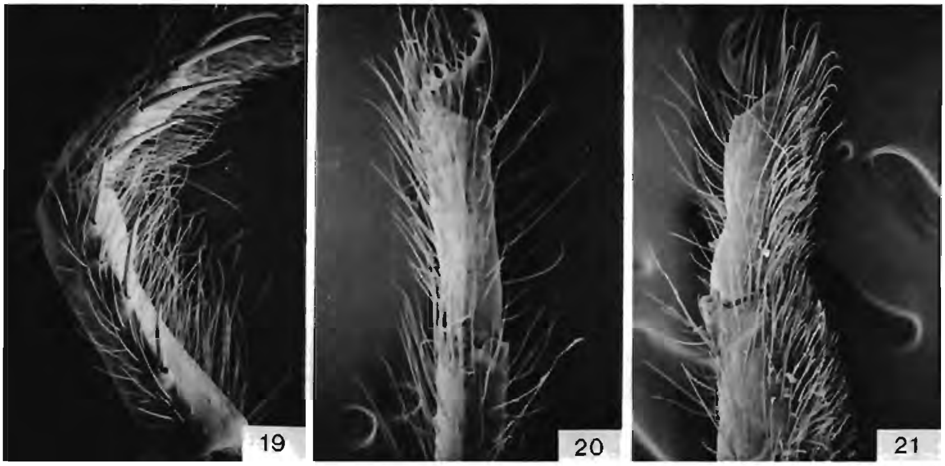


Figs 19–21. Miginae, legs. 19, 21. *Poecilomigas abrahami* (O. P. Cambridge), South Africa. 20. *Migas* sp., Tauranga, New Zealand. 19. Tibia-tarsus I, ♀, 19 ×. 20. Metatarsus-tarsus IV, ♂, 25 ×. 21. Metatarsus-tarsus IV, ♂, 26 ×

## TAXONOMY

### Family Migidae Simon

Definition as in Griswold (1987): Fang with dorsolateral keels (Fig. 3), ocular area broad, at least 0,40 width caput (Figs 22, 33, 47, 62), thoracic fovea transverse, recurved or straight (Figs 22, 33, 47, 62).

### Genus *Poecilomigas* Simon

*Poecilomigas* Simon, 1903*a*:23. Type-species, by monotypy, *P. pulchripes* Simon 1903*a* (= *Moggridgea abrahami* O. P. Cambridge, 1889). Roewer, 1942:192. Bonnet, 1958:3736.

*Caedmon* O. P. Cambridge, 1903:143. Type-species, by original designation, *Moggridgea abrahami* O. P. Cambridge, 1889. Roewer, 1942:193.

Diagnosis: Distinguished from the other African migid genus, *Moggridgea* O. P. Cambridge, in having a basal tooth on the fang (Fig. 3), tibia III cylindrical

(Fig. 25), without a dorsobasal depression (Griswold 1987, Figs 17–18), and by the absence of erect, lamellate setae (Griswold 1987, Fig. 4) beneath patellae (Figs 29, 54). Tentatively distinguished from the other genus of the Miginae, the Australasian *Migas* L. Koch, by the following combination of characters: legs with dark dorsal and lateral maculations on the tibiae and broad median annuli on the metatarsi (Figs 1–2, 28), spermathecae simple (Figs 41–46), males with strong scopulae beneath tarsi and distal portions of metatarsi III and IV (Figs 21, 36) and dorsal spines on femora short and stout (Fig. 35) to absent (Fig. 70).

Description: Medium sized mygalomorphs, 6,00–22,00 mm in length. Strongly sexually dimorphic. Sparsely setose to glabrous. Carapace smooth in ♀, weakly rugose in ♂, length 1,05–1,28 times width; caput with median and lateral setal rows, prefoveal setae present. Ocular area 0,51–0,66 width caput; AER slightly recurved, ALE greater than or equal to AME; PER recurved, PLE greater than or equal to PME; ocular quadrangle narrowed anteriorly. Thoracic fovea 0,16–0,24 width carapace, posterior projection absent to rarely weak. Sternum length 1,16–1,36 times width, margin sinuate; sigilla length 1,13–1,79 times width. Cuspules present on labium and pedipalpal coxa of ♀, absent from ♂; thorns (Griswold 1987:10) absent. Leg formula 4123 (♀) or 1423 (♂); length coxa I 0,78–0,95 width sternum, slightly longer than coxa IV; ♀ with anteroventral spines on tibiae and metatarsi I and II, ♂ spines irregular; scopulae present in ♂, absent in ♀. Trichobothrial pattern typical for family, as in *Moggridgea* (Griswold, 1987: 10–11); trichobothrial base distally embedded, smooth (Fig. 9) to weakly corrugiform (Fig. 11). Tarsal organ oval (Fig. 10), low, domed, with a weak distal lobe and concentric ridges. Posterior lateral spinnerets (Figs 12–13) 3 segmented, separated at base by diameter, basal segment longest, median and distal about equal in length, each about 0,40 length basal; diameter PLS basal segment 1,15–1,19 times length, 1,03–1,13 times length PMS; PLS with ventral group of 2 large and 8–10 slender spigots on median (Fig. 12), dense apical group of slender spigots (Fig. 13) on distal segment; PMS with 8–10 slender spigots in apical group (Fig. 14). ♂ without clasping spines or apophyses; palpal tarsus with apical group of 6–10 slender spines; bulb uniform, connected to tarsus by small proximal lobe, distal lobe kidney-shaped, with simple, slender, reflexed embolus. Spermathecae paired, simple, unbranched, straight to distally curved, with pores throughout, unsclerotised.

## Misplaced names

While the type of *Caedmon* O. P. Cambridge, 1903 (*Moggridgea abrahami* O. P. Cambridge, 1889) is also the type species of *Poecilomigas* Simon, the other species described in *Caedmon* are not congeneric with the type species, and have been transferred to *Moggridgea* O. P. Cambridge (Griswold 1987). *Caedmon affinis* O. P. Cambridge is a synonym of *Moggridgea terricola* Simon, and *C. congener*, *dubia*, and *thoracica*, all of O. P. Cambridge, are synonyms of *M. quercina* Simon.

### Key to species of *Poecilomigas*

1 Female .................................................. 2
— Male .................................................. 3
2(1) Dorsum and sides of abdomen entirely dark (Fig. 47); spermathecae (Fig. 46) straight, length less than 4,80 times diameter .................. **basilleupi**
— Dorsum of abdomen with broad, dark band, middle of sides pale (Figs 2, 22); spermathecae usually with distal curve, length greater than 5,00 times diameter .................................................. **abrahami**
3(1) Dorsum of abdomen pale, with anteromedian dark diamonds and posterior chevrons (Fig. 62); palpal tibia relatively stout (Figs 59–61), height greater than 0,50 length; embolus elongate, length greater than 1,80 times bulb width **elegans**
— Dorsum of abdomen with broad, dark band, middle of sides pale (Figs 1, 33); palpal tibia slender (Figs 57–58), height less than 0,45 length; embolus length less than 1,50 times bulb width ............................ **abrahami**

### *Poecilomigas abrahami* (O. P. Cambridge)

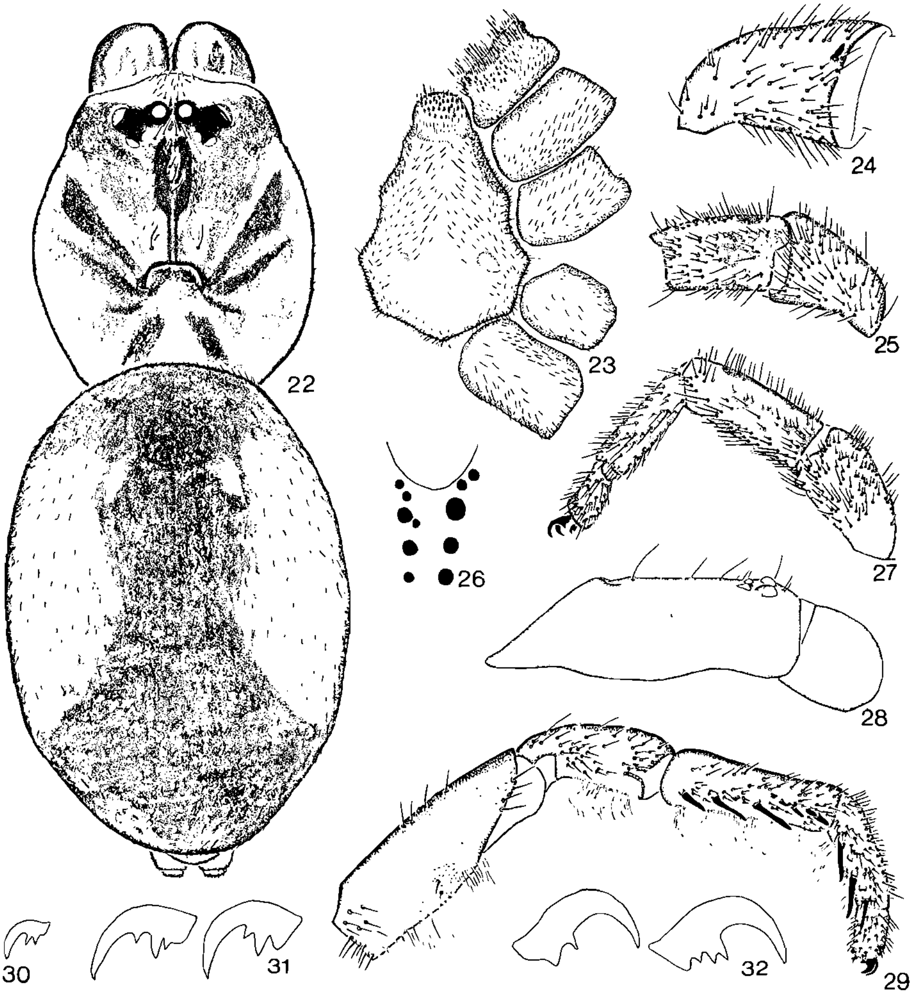
Figs 1–14, 16–19, 21–45, 57–58

*Moggridgea abrahami* O. P. Cambridge, 1889:41 (type ♀, Grahamstown, South Africa, UMO).
*Migas abrahami*; Simon, 1892:82.
*Poecilomigas abrahami*; Purcell, 1903:72. Hewitt, 1915*b*:91. Bonnet, 1958:3737.
*Caedmon abrahami*; O. P. Cambridge, 1903:144. Roewer, 1942:193.
*Moggridgea tidmarshi* Lenz, 1889:578 (type ♀, Grahamstown, South Africa, lost).
*Moggridgea tidmarschi* (lapsus) Bonnet, 1958:3737.
*Moggridgea stauntoni* Pocock, 1902:319 (type ♀, Durban, South Africa, BMNH). Roewer, 1942:192.
*Poecilomigas abrahami* var. stauntoni, Hewitt, 1915*a*: 125.
*Poecilomigas pulchripes* Simon, 1903*a*:23 (type ♀, 19613, Natal, South Africa, MNHN). Roewer, 1942:192. Bonnet, 1958:3737.

Synonymy: The synonymy of *tidmarshi*, described in November 1889, with *abrahami*, described in April 1889, was first proposed by Pocock (1895). The type of *tidmarshi* was destroyed along with the collections of the Lübeck Natural History Museum in World War II, but Lenz's (1889) description of the spider and nest leaves no doubt concerning the proposed synonymy. Based upon examination of the type of *stauntoni* and populations of *Poecilomigas* from Natal and the eastern Cape, Hewitt suggested the synonymy of *pulchripes* with *stauntoni* and of these with *abrahami* (Hewitt 1915*a*). Inexplicably, neither Roewer (1942) nor Bonnet (1958) accepted Hewitt's conclusion. The types of *abrahami*, *stauntoni* and *pulchripes* have been examined and found to exhibit only minor differences, confirming the opinion of Hewitt (1915*a*).

Diagnosis: Dorsum of abdomen (Figs 1–2, 22, 33) with broad longitudinal dark band, sides pale at least in centre; spermathecae (Figs 41–45) usually curved distally, length greater than 5,00 times width; ♂ palpus (Figs 57–58) slender, tibia length greater than 1,80 times tarsus, height less than 0,45 length; embolus length less than 1,50 times bulb width.

Female (*abrahami* type): Total length 16,13. Carapace (Fig. 22) and chelicerae red-brown, venter yellow-white; caput with paired longitudinal brown bands beginning between PME, joined and greatly narrowed before fovea; sides of caput



Figs 22–32. *Poecilomigas abrahami* (O. P. Cambridge), ♀. 22–23, 25–27, 29–32. Type of *Moggridgea abrahami* O. P. Cambridge. 24. Type of *Moggridgea stauntoni* Pocock. 28. Type of *Poecilomigas pulchripes* Simon. 22. Carapace and abdomen, dorsal. 23. Venter. 24. Patella III, l., anterolateral. 25. Patella-tibia III, r., anterolateral. 26. Cheliceral teeth. 27. Patella-tarsus IV, r., anterolateral. 28. Carapace, lateral. 29. Femur-tarsus I, r., retrolateral. 30. Palpal claw. 31. STC I. 32. STC IV.

dusky, and dusky bands radiating from fovea along caput margin and posteriorly. Ocular area dusky, with black pigment surrounding each AME, posterior to ALE, and between PME and PLE; clypeus yellow-brown. Legs yellow-brown, all femora and patellae III–IV dusky dorsolaterally; tibiae-tarsi I, II red-brown, tibiae III, IV (Fig. 27) with proximal dorsomedian dark triangle and broad median lateral maculations, metatarsi III, IV with median dorsolateral maculations. Abdomen (Fig. 22) grey except yellow-white anterior to epigastric furrow, over booklungs, and spinnerets; with dorsal purple-grey longitudinal band broadened to spinnerets.

Carapace (Fig. 22) 6,47 long, 4,20 wide, 1,93 high, height at fovea 0,34 width carapace. Caput 0,75 width carapace, flat, height at OA 1,07 times height at fovea; median longitudinal row of 4 long setae, 13 pairs of short, lateral setae, prefoveal setae elongate; 5 long and 2 short setae between PME, 3 long and 20 short setae on clypeus; clypeus 0,62 length OA, margin curved. Thoracic fovea 0,20 width carapace, width 2,83 times length, with weak posterior projection.

Ocular area 0,58 width caput, 2,81 times wider than long; AER 2,35 wide, 1,33 times width PER; PER 1,77 wide. Ratio of eyes: AM:AL:PM:PL, 1,00:1,88:1,13:1,00, diameter AM 0,26; AM separated by their diameter, PM by 3,23 times. Ocular quadrangle 1,65 times wider than long, posterior 1,52 times anterior.

Sternum (Fig. 23) 3,94 long, 3,32 wide, widest behind coxae II, setose anteriorly and along posterior margin; sigilla 0,16 width sternum, oval, length 1,45 times width, distance between 2,17 times distance from margin. Labium 0,90 long, 1,06 wide, with 34 small cuspules. Pedipalpal coxa 2,00 long, 1,19 wide, apex weakly produced, with 26–27 cuspules in distally attenuate median band. Chelicerae 0,87 long, promargin of fang furrow (Fig. 26) with 2 small, 3 large, retromargin with 3 small, 3 large teeth.

Coxae I, II setose, III and IV sparsely setose; legs and palpi setose; femora with 2–3 long, dorsomedian bristles; palpal femur with anteroventral row of bristles; legs I, II with long slender setae beneath femora, patellae-metatarsi with dense vestiture of long, fine, curved hairs ventrally between spines (Fig. 29); patella III and IV (Fig. 27) with slender setae, III without spines (Fig. 25). Spination: palpus, patella v1, tibia v12a1, tarsus v222a1; legs I (Fig. 29), II, tibiae v121–21–21, metatarsi v22212; leg III, tibia v1 (apical); leg IV (Fig. 27), metatarsus v1 (apical). Basal teeth of superior tarsal claws: palpus (Fig. 30) 2, I (Fig. 31), II 2–3, III, IV (Fig. 32) 1–3. Leg measurements:

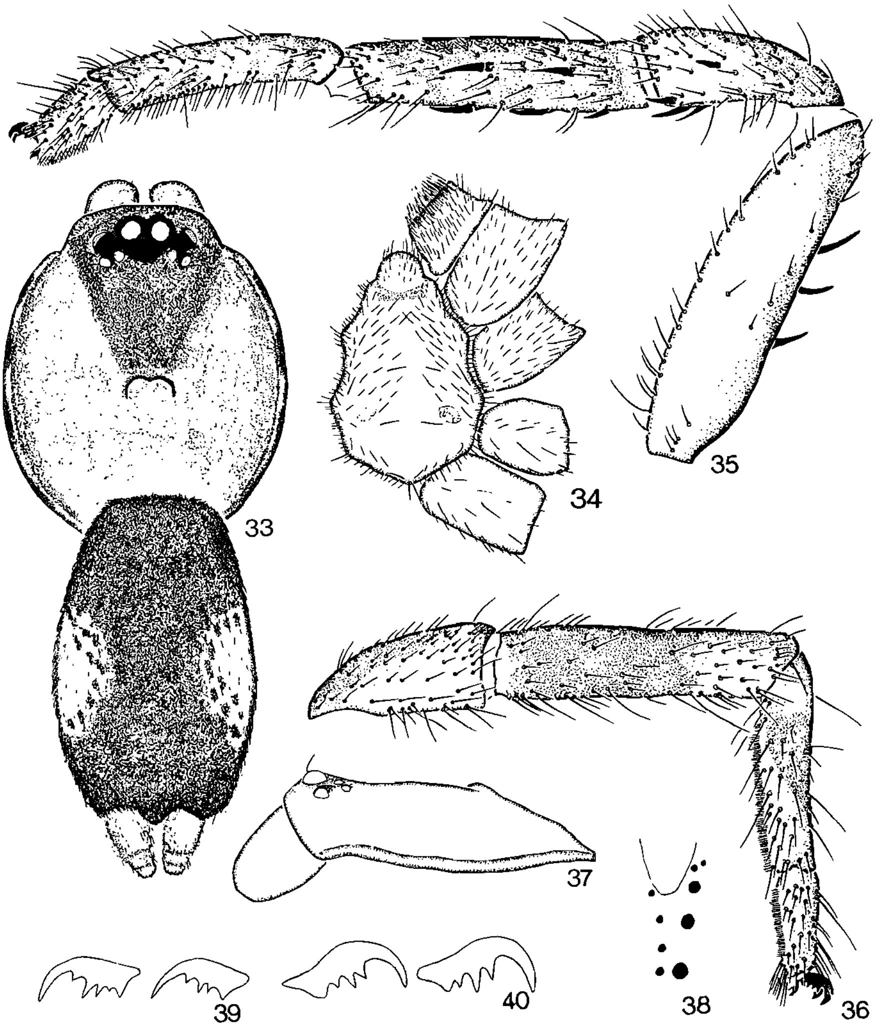
| | I | II | III | IV | Palpus |
|---|---|---|---|---|---|
| Femur | 4,00 | 3,47 | 2,73 | 3,87 | 2,67 |
| Patella | 2,73 | 2,53 | 2,13 | 2,80 | 1,47 |
| Tibia | 3,33 | 2,47 | 1,73 | 3,07 | 1,60 |
| Metatarsus | 2,13 | 2,00 | 1,80 | 2,73 | — |
| Tarsus | 1,20 | 1,13 | 1,40 | 1,73 | 1,87 |
| Total | 13,39 | 11,60 | 9,79 | 14,20 | 7,61 |

Abdomen 9,73 long, 7,00 wide. Spermathecae (Fig. 41) strongly curved distally, slender, length 7,50 times diameter, 1,15 times base width.

Variation: Total length 6,13–21,33; height at fovea 0,30–0,46 carapace width. Caput 0,75–0,82 width carapace, flat (Fig. 28) to inclined, height at OA 0,90–1,26 times height at fovea, with 1–2 pairs of prefoveal bristles; ocular area 0,51–0,60 width caput, diameter ALE 1,05–1,88 times AME, PLE 1,00–1,75 times PME; clypeus 0,55–1,07 OA length, margin curved to straight, with 8–32 setae; thoracic fovea 0,17–0,24 width carapace, slightly to strongly recurved, width 2,06–3,40 times length, usually simple. Sternal sigilla 0,09–0,25 width sternum, nearly round to oval, length 1,13–1,79 times width; labium with 10–32, pedipalpal coxa with 12–38 cuspules; fang furrow with 4–5 pairs of teeth. Fine, elongate setae beneath patellae-metatarsi I and II usually dense (Fig. 29), but sparse in small specimens; patella III with anteroapical spine (Fig. 24), spine rarely absent (Fig. 25); tibia I with 3–6, metatarsus I with 3–7 pairs of ventrolateral spines; palpal claw with 2–5, STC I with 2–4, STC IV with 2–3 basal teeth. Spermathecae (Figs 41–45) weakly to strongly curved distally, pores dense, length 5,00–8,40 times diameter, 1,00–1,48 times base width.

Male (Pietermartizburg): Total length 8,27. Carapace (Fig. 33) orange-brown, caput dusky; ocular area black around AME and between ALE and PER; venter yellow-white; legs (Figs 35–36) and abdomen (Fig. 33) as in ♀.

Carapace 4,00 long, 3,47 wide, height at thoracic fovea 0,27 carapace width; weakly rugose especially along caput margin, sides emarginate. Caput 0,60 width carapace, nearly flat (Fig. 37), height at OA 1,07 times at fovea; with median and lateral rows of minute setae, prefoveal setae small (Fig. 33), large seta between AME; clypeus 0,50 length OA, weakly striate. Thoracic fovea 0,17 width carapace, width 2,57 times length, with weak posterior projection.



Figs 33–40. *Poecilomigas abrahami* (O. P. Cambridge), ♂ (Town Bush, Pietermaritzburg). 33. Carapace and abdomen, dorsal. 34. Venter. 35. Femur-tarsus I, r., anterolateral. 36. Patella-tarsus IV, l., anterolateral. 37. Carapace, lateral, 38. Cheliceral teeth. 39. STC I. 40. STC IV.

Ocular area 0,66 width caput, 2,56 times wider than long; AER 1,32 wide, 1,17 times width PER; PER 1,13 wide. Ratio of eyes: AM:AL:PM:PL, 1,56:2,00:1,00:1,11, diameter AM 0,23; AM separated by 0,48 diameter, PM by 3,53 times diameter. Ocular quadrangle 1,67 times wider than long, posterior 1,39 times anterior.

Sternum (Fig. 34) 2,32 long, 1,87 wide, broadest behind coxae II, sparsely setose; sigilla 0,14 width sternum, oval, length 1,33 times width, distance between 3,00 times distance from margin. Labium 0,55 long, 0,68 wide; pedipalpal coxa 1,10 long, 0,68 wide, apex blunt. Chelicerae 0,23 long, smooth dorsally, promargin of fang furrow (Fig. 38) with 2 small, 3 large, retromargin with 4 small teeth.

Legs sparsely setose; femora (Fig. 35) with stout dorsomedian spines. Femur I 0,98, tibia I 0,83, femur IV 0,90, tibia IV 0,86 width carapace. Scopulae: weak, divided beneath tarsi I (Fig. 35) and II; dense, entire beneath tarsi and distal ¼ (III) to ¾ (IV) of metatarsi III and IV (Fig. 36). Spination: palpus, femur d1 (apical), tarsus 8–10 (apical); leg I (Fig. 35), femur d111, patella d1v3 (apical), tibia a11v222; leg II, femur d1, tibia a11v111; leg III, femur d1, patella a1 (apical); leg IV, femur d1. Basal teeth of superior tarsal claws: leg I (Fig. 39) 3–4, IV (Fig. 40) 3. Leg measurements:

| | I | II | III | IV | Palpus |
|---|---|---|---|---|---|
| Femur | 3,40 | 3,07 | 2,20 | 3,07 | 2,03 |
| Patella | 2,07 | 1,73 | 1,40 | 1,87 | 1,08 |
| Tibia | 2,60 | 2,20 | 1,63 | 2,73 | 1,39 |
| Metatarsus | 2,40 | 2,00 | 1,60 | 2,13 | — |
| Tarsus | 0,87 | 0,93 | 1,20 | 1,27 | 0,66 |
| Total | 11,34 | 9,93 | 8,03 | 11,07 | 5,16 |

Palpus (Figs 57–58) with femur 0,59, tibia 0,40 width carapace; femur 2,89, tibia 1,98 times length tarsus; tibia slender, height 0,37 length; bulb width 0,85 tarsus length, embolus length 1,19 times bulb width.

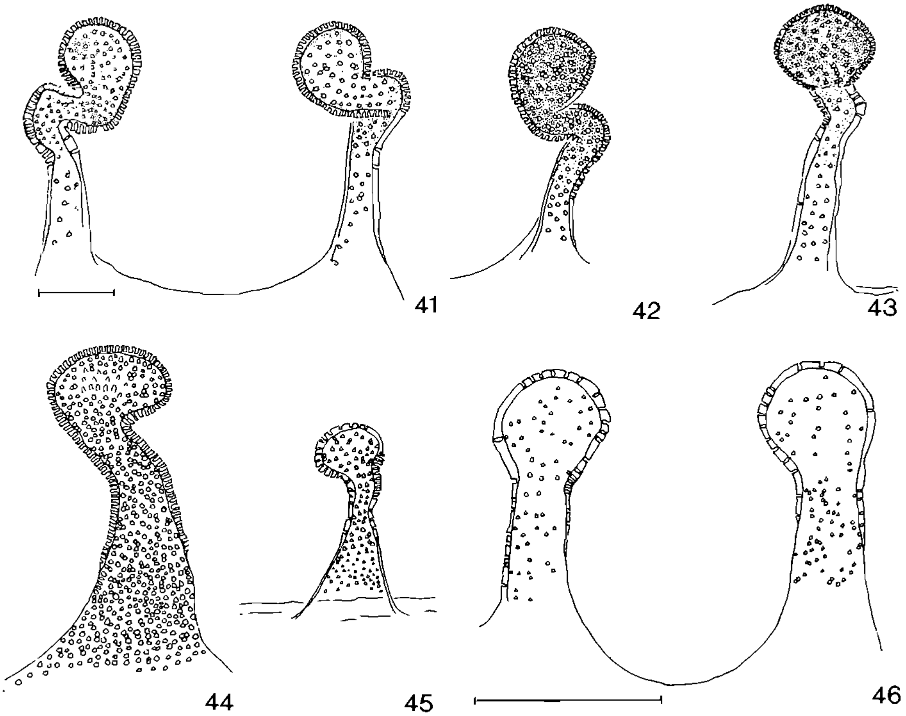
Abdomen 3,93 long, 2,60 wide, dorsum with short, attenuate setae.

Variation: Total length 7,33–8,40. Height at fovea 0,21–0,30 carapace width; caput 0,60–0,66 carapace width, height at OA 1,07–1,15 times height at fovea. Thoracic fovea 0,17–0,20 width caput, 2,57–5,00 times wide as long, posterior projection weak to absent. Ocular area 0,61–0,66 width caput, 2,17–2,63 times wide as long; diameter ALE 1,13–1,43 times AME, PLE 1,00–1,25 times PME. Dorsal spines on femora present or absent; apical retroventral spine on tibia I present or absent. Palpal femur 0,53–0,59, tibia 0,36–0,40 width carapace; embolus length 1,19–1,40 times bulb width.

Distribution (Fig. 18): Eastern South Africa (see section dealing with geography).

Material examined: SOUTH AFRICA: *Cape:* Grahamstown, 1 ♀, (*abrahami* type), N. Abraham (UMO), 1 ♀, 2.i.1911, 1 ♀, 7.x.1912, 10 ♀ 1 ♂, 15.x.1912, 4 ♀, 2.xii.1911, T. & R. Graham (AM), 7 ♀, vi.1912, M. Tidmarsh (AM), 1 ♀, 13.xi.1912, E. Cherry & G. Baines (AM), Botanical Gardens, 1 ♀, 21.ix.1918, G. van Dam (TM), Coldspring, 1 ♀, J. Hewitt (AM); Pirie Bush, near King William's Town, 1 ♀ (SAM); Isidenge (Cwencwe) State Forest, Amatola Mts, 22 km NW King William's Town (32°41'S:27°17'E), el. 700 m, 1 ♀, '2-door nest on *Rhus chirendensis*', 25.vii.1985, A. Duckworth & P. Croeser (NM); East London, 1 ♀ (AM); Alexandra State Forest (33°42'S:26°20'E), 1 juv. ♀, 24.viii.1985,

E. J. Wright (NM); Fraserburg (?), 1 ♀, 1954, D. Oliver (MRAC). *Natal:* 1 ♀ (*pulchripes* type), C. Martin (MNHN); Durban, 1 ♀ (*stauntoni* type), G. Staunton (BMNH), 2 ♀ (SAM), 2 ♀, i.1916, B. Marley (NM), 1 ♀, iv.1916, B. Marley (NM), 1 ♀, 7.xi.1915, B. Marley (SAM), 1 ♀, N. Abraham (AM), 3 ♀, N. Abraham (NM), 2 ♀, ii.1915, C. Akerman (NM), Botanical Gardens, 1 ♀, B. Marley (SAM); Port Edward, 4 km NW, 1 ♀, 16.vi.1983, J. Stannard (NM); Krantzkloof, 1 ♀, 1.xi.1915, B. Marley (SAM); Kloof, 2 ♀, B. Marley (NM); Pietermaritzburg, Botanical Gardens, 2 ♀, 15.iv.1984, T. Meikle Griswold (NM); Town Bush, Pietermaritzburg, el. 3200–3400 ft, 'indigenous forest', 1 ♀, 8.i.1984, 1 ♀, 13.iii.1985, 2 ♂, 20–29.ix.1984, (moulted), T. Meikle Griswold (NM); Umgeni Valley Nat. Res., 3 km E. Howick (29°27'S:30°14'E), el. 3000 ft, 'riparian woodland', 2 ♀, 1.vi.1986, E. J. Wright & C. E. Griswold (NM); Karkloof Forest, 25 mi. NNW Pietermaritzburg (29°26'S:30°19'E), el. 4800 ft, 1 ♀, ii.1953, R. F. Lawrence (NM); Zululand, Nkandla Forest, 2 ♀, i.1937, R. F. Lawrence (NM); Hluhluwe Nat. Res. (28°05'S:32°02'E), el. 900 ft, 1 ♀, 1.vi.1985, T. Meikle Griswold (NM), Dlinza Forest, Eshowe (28°54'S:31°28'E), el. 1800 ft, 3 ♀, 21.i.1984, 2 ♀ 28.vi.1986, T. Meikle Griswold & C. Griswold (NM); Sordwana Bay, 50 mi E. Ubombo, 1 ♀, 5.iv.1958 (CAS). TRANSKEI: Port St Johns (Umzimvubu), 1 ♀, ii.1921, M. Wager (AM).



Figs 41–46. *Poecilomigas* spp., spermathecae (Scale lines equal 0,20 mm—that at 41 refers to 41–45, that at 46 refers to that figure only; single spermathecae depicted are left). 41–45. *P. abrahami* (O. P. Cambridge). 41. Type of *Moggridgea abrahami* O. P. Cambridge. 42. Grahamstown. 43. Durban. 44. Nkandla Forest, Zululand. 45. Pietermaritzburg. 46. Holotype of *P. basilleupi* Benoit.

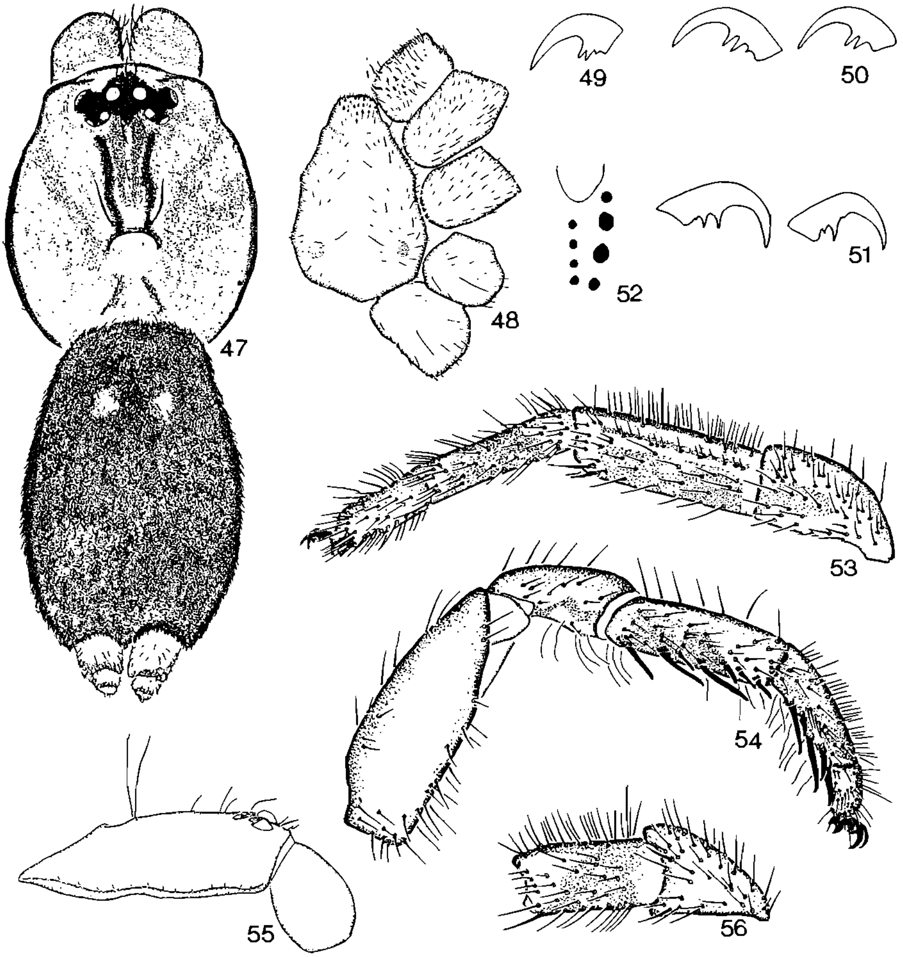
### *Poecilomigas basilleupi* Benoit

Figs 18, 46–56

*Poecilomigas basilleupi* Benoit, 1962:276 (holotype ♀, 112228, Mt Kilimanjaro, Tanzania, MRAC). Brignoli, 1983:121.

Diagnosis: Dorsum and sides of abdomen entirely dark (Fig. 47); spermathecae (Fig. 46) straight, length of spermathecal trunk less than 4,80 times width.

Female (holotype): Total length 8,13. Carapace (Fig. 47) orange-brown with dark margin; caput with faint dark bands extending to fovea; ocular area dusky with black pigment surrounding AME, behind ALE, and between PME and PLE; clypeus with faint oblique lateral bands. Chelicerae orange-brown, venter and coxae yellow-white. Legs yellow-brown, tibiae dusky, with dorsal distad-directed dark triangles and lateral maculations, metatarsi with broad median annuli



Figs 47–56. *Poecilomigas basilleupi* Benoit, holotype ♀. 47. Carapace and abdomen, dorsal. 48. Venter. 49. Palpal claw. 50. STC I. 51. STC IV. 52. Cheliceral teeth. 53. Patella-tarsus IV, r., anterolateral. 54. Femur-tarsus I, r., retrolateral. 55. Carapace, lateral. 56. Patella-tibia III, r., anterolateral.

(Fig. 53). Dorsum and sides of abdomen dark grey (Fig. 47), venter paler, white anterior to epigastric furrow and over booklungs, spinnerets yellow-white, segments with faint apical annuli.

Carapace (Fig. 47) 3,67 long, 3,00 wide, 1,07 high, height at fovea 0,36 width carapace. Caput 0,78 width carapace, inclined, height at OA 1,15 times height at fovea; with median row of 3 long setae and lateral rows of 4 short setae, prefoveal setae elongate; 2 long setae between PME, 4 long setae on clypeus, clypeal margin with 5–6 setae; clypeus 0,53 length OA. Thoracic fovea 0,20 width carapace, width 3,00 times length.

Ocular area 0,59 width caput, 2,41 times wider than long; AER 1,32 wide, 1,24 times width PER; PER 1,06 wide. Ratio of eyes: AM:AL:PM:PL, 1,50:2,25:1,00:1,25, diameter AM 0,19; AM separated by 0,79 diameter, PM by 3,5 times. Ocular quadrangle 1,57 times wider than long, posterior 1,29 times anterior.

Sternum (Fig. 48) 2,13 long, 1,74 wide, broadest behind coxae II, sparsely setose; sigilla 0,15 width sternum, nearly round, length 1,14 times width, lateral, distance between 3,57 times distance from margin. Labium 0,52 long, 0,71 wide, with 16 pointed cuspules. Pedipalpal coxa 1,16 long, 0,81 wide, with 15–17 cuspules, apex blunt. Chelicerae 0,73 long, promargin of fang furrow (Fig. 52) with 1 small and 3 large teeth, retromargin with 4 small teeth.

Legs sparsely setose; tibiae and metatarsi I and II with sparse long ventral hairs (Fig. 54); patellae III and IV (Fig. 53) with sparse anterolateral setae, III without apical spine (Fig. 56). Spination: palpus, patella v1, tibia v12a1, tarsus v222a1; leg I (Fig. 54), tibia v121–21–12, metatarsus v21–222; leg II, tibia v21221, metatarsus v2222; leg III, tibia v2 (apical), metatarsus v2 (apical); leg IV (Fig. 53), tibia v1 (apical), metatarsus v1 (apical). Basal teeth of superior tarsal claws: palpus (Fig. 49) 3, I (Fig. 50), II 2–3, III, IV (Fig. 51) 2–3. Leg measurements:

| | I | II | III | IV | Palpus |
|---|---|---|---|---|---|
| Femur | 2,40 | 2,13 | 1,67 | 2,27 | 1,26 |
| Patella | 1,53 | 1,33 | 1,27 | 1,53 | 0,93 |
| Tibia | 1,53 | 1,40 | 1,07 | 1,80 | 0,97 |
| Metatarsus | 1,33 | 1,13 | 1,20 | 1,53 | — |
| Tarsus | 0,80 | 0,87 | 0,93 | 1,20 | 1,27 |
| Total | 7,59 | 6,86 | 6,14 | 8,33 | 4,43 |

Abdomen 4,27 long, 2,87 wide. Spermathecae (Fig. 46) straight, pores sparse; length 4,54 times diameter, 1,47 times base width.

Male: Unknown.

Distribution (Fig. 18): Known only from the type locality in East Africa.

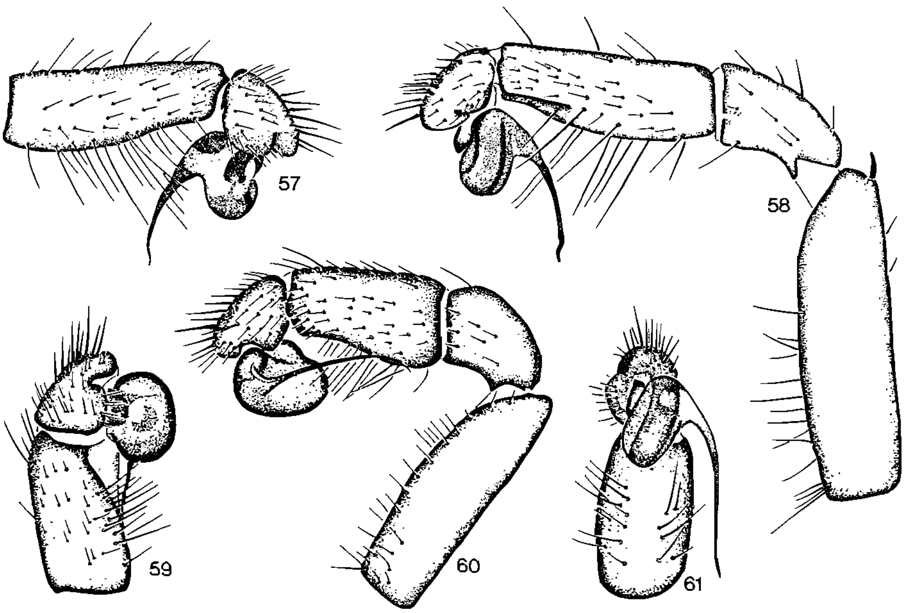
Material examined: TANZANIA: Kilimanjaro, Marungu, SE slopes, 1800–2200 m elev., 1 ♀ (holotype), 20–27.vii.1957 (P. Basilewsky & N. Leleup, MRAC).

### **Poecilomigas elegans** sp.n.

Figs 18, 59–68, 70

Etymology: L. *elegans*—fine, referring to the handsome markings of this species.

Diagnosis: Dorsum of abdomen yellow-white, with anteromedian purple-grey diamonds and posterior chevrons (Fig. 62); ♂ palpus (Figs 59–61) relatively stout,



Figs 57–61. *Poecilomigas* spp., ♂, palpi, l. 57–58. *P. abrahami* (O. P. Cambridge), Town Bush, Pietermaritzburg. 59–61. *P. elegans* sp. n., holotype. 57. Tibia-tarsus, anterolateral. 58. Femur-tarsus, retrolateral. 59. Tibia-tarsus, anterolateral. 60. Femur-tarsus, retrolateral. 61. Tibia-tarsus, ventral.

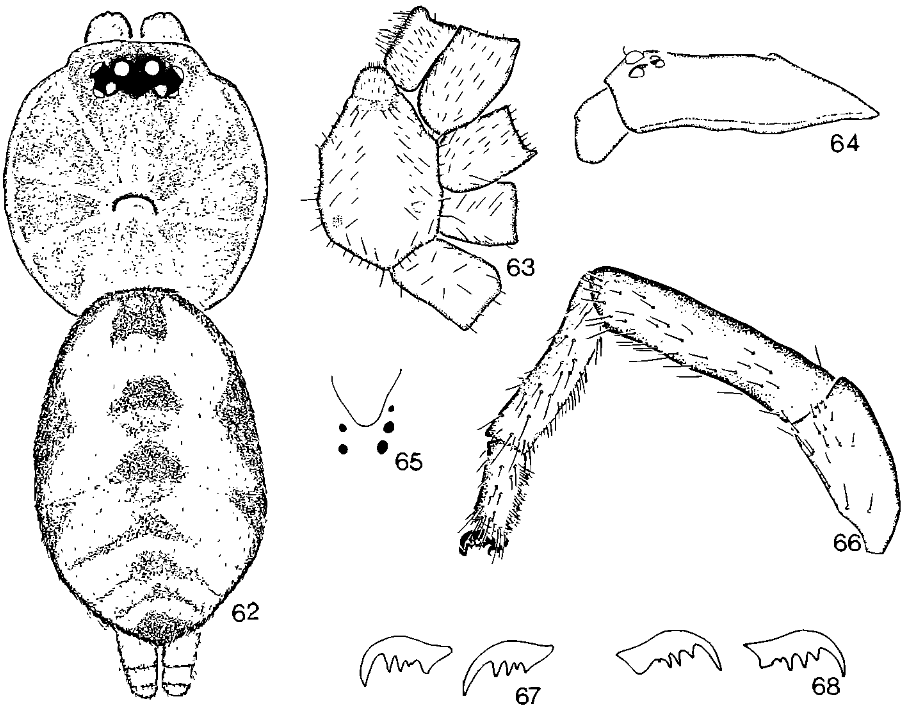
tibia height greater than 0,50 length, length less than 1,50 times tarsus; embolus elongate, length greater than 1,80 times bulb width.

Male (holotype): Total length 7,73. Carapace (Fig. 62) orange-brown, faint dusky radii extending from thoracic fovea, ocular area black; chelicerae yellow-brown, venter, coxae and trochanters yellow-white; legs yellow-brown, palpi yellow-white. Abdomen (Fig. 62) and spinnerets yellow-white, with purple-grey sides, anteromedian diamonds and posterior chevrons.

Carapace (Fig. 62) 3,47 long, 3,20 wide, height at thoracic fovea 0,27 carapace width; weakly rugose, sides emarginate. Caput 0,60 carapace width, low, slightly inclined (Fig. 64), height at OA 1,15 times at fovea; with median seta and lateral setal rows, setae very small, prefoveal setae short; 1 seta between AME and 1 on clypeus; clypeus 0,50 length OA, margin straight. Thoracic fovea 0,16 width carapace, width 3,75 times length.

Ocular area 0,64 caput, 2,31 times wider than long; AER 1,19 wide, 1,09 times width PER; PER 1,10 wide. Ratio of eyes: AM:AL:PM:PL, 1,18:1,36:1,00:1,00, diameter AM 0,21; AM separated by 0,85 diameter, PM by 3 times diameter. Ocular quadrangle 1,70 times wider than long, posterior 1,38 times anterior.

Sternum (Fig. 63) 2,10 long, 1,50 wide, sides parallel, sparsely setose laterally; sigilla 0,15 width sternum, oval, length 1,50 times width, lateral, distance between 5,50 times distance from margin. Labium 0,52 long, 0,52 wide; pedipalpal coxa 0,97 long, 0,61 wide, apex weakly produced. Chelicerae 0,33 long, with weak dorsomedian protuberences, promargin of fang furrow (Fig. 65) with 3, retromargin with 2 teeth.



Figs 62–68. *Poecilomigas elegans* sp. n., holotype ♂. 62. Carapace and abdomen, dorsal. 63. Venter. 64. Carapace, lateral. 65. Cheliceral teeth. 66. Patella-tarsus IV, r., anterolateral. 67. STC I. 68. STC IV.

Femora sparsely covered with short setae, patellae-tarsi with slender setae. Femur I 1,02, tibia I 0,75, femur IV 0,96, tibia IV 0,75 width carapace. Scopulae: weak, divided beneath tarsi I (Fig. 70), II; dense, entire beneath tarsi and distal ⅔ (III) to ¾ (IV) of metatarsi III, IV (Fig. 66). Spination: palpus, tarsus 9–10 (apical); leg I (Fig. 70), patella v1 (apical), tibia v1221; leg II, tibia v1 (apical); leg III, tibia v1 (apical); leg IV, v2 (apical). Basal teeth of superior tarsal claws: leg I (Fig. 67)–IV (Fig. 68), 3–4. Leg measurements:

| | I | II | III | IV | Palpus |
|---|---|---|---|---|---|
| Femur | 3,27 | 2,93 | 2,20 | 3,07 | 1,61 |
| Patella | 1,87 | 1,60 | 1,33 | 1,67 | 0,82 |
| Tibia | 2,40 | 2,13 | 1,60 | 2,40 | 1,00 |
| Metatarsus | 2,07 | 1,87 | 1,53 | 1,80 | — |
| Tarsus | 0,80 | 0,87 | 0,93 | 1,00 | 0,69 |
| Total | 10,41 | 9,40 | 7,59 | 9,94 | 4,12 |

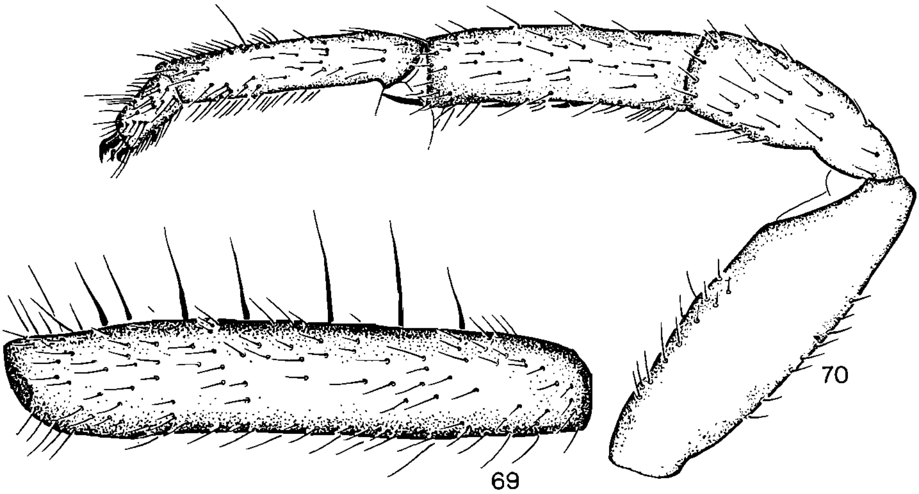
Palpus (Figs 59–61) with femur 0,50, tibia 0,31 width carapace; femur 2,33, tibia 1,44 times length tarsus; tibia stout, height 0,59 length; bulb width 0,84 tarsus length; embolus elongate, length 1,89 times bulb width.

Abdomen 4,40 long, 2,93 wide, dorsum with rows of short, blunt setae.

Female: Adult ♀ unknown. A juvenile has the abdomen yellow-white with a dorsomedian longitudinal band of purple-grey including diffuse chevrons and the legs typically banded.

Distribution (Fig. 18): Known only from the type locality in Zululand.

Material examined: SOUTH AFRICA: *Natal:* Zululand, Eshowe (28°54′S:31°28′E), 1 ♂ (holotype 3366), 1 juv. ♀, xi–xii.1943, L. Bevis (NM).



Figs 69–70. Miginae, ♂, r. leg I, anterolateral. 69. *Migas taierii* Wilton, femur (New Zealand). 70. *Poecilomigas elegans* sp. n., femur-tarsus (holotype).

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